

Information Resources Management Plan 1999-2003 Indian Health Service

Table of Contents

I. Executive Summary	1
II. Strategic Plan	2
A. Strategic Planning Assumptions	2
B. Mission and Organization.....	4
C. Data Collection, Validation, and Information Needs.....	7
D. IRM Vision, Goals, and Strategies	8
E. Major Strategic Issues	11
F. Automated Information Systems (AIS) Security.....	12
III. Capital Planning and Investment	12
A. Strategic IT Planning	12
B. IT Investment Review Process.....	12
C. IT Performance Measurement Program.....	13
D. Information Technology Architecture (ITA)	13
IV. Projects	14
A. Government - Computer Patient Record (G-CPR)	14
B. The Year 2000 Problem.....	14
V. Appendix A - Automated Information Systems (AIS) Security	A-1
VI. Appendix B - Current Information Technology Architecture.....	B-1
VII. Appendix C - IHS RPMS Software Applications	C-1
VIII. Appendix D - IHS Year 2000 Plan	D-1
IX. Appendix E - List of RPMS Software Applications	E-1
X. Appendix F - Government - Computer Patient Record (G-CPR)	F-1

I. Executive Summary

Introduction

The 1999-2003 Indian Health Service (IHS) Information Resources Management (IRM) Plan conforms to the guidance set forth in the DHHS Call for Five-Year IRM Plan and other guidance issued by the Department of Health and Human Services (DHHS) and the Office of Management and Budget (OMB). The IRM plan will be linked to strategic and performance plans objectives and activities as appropriate. The Resource and Patient Management System (RPMS) will be used to support performance indicators in IHS' Annual Performance Plan. The core challenge for IHS' IRM program is to continually align information technology (IT) products and services with the mission needs and directions of the agency. IHS' goals and mission strategies are largely dependent upon information technology.

Improvements in technology and/or improvements in the implementation of existing technology are likely to profoundly affect the realization of the IHS Strategic Objectives. It is increasingly evident that expansion in the use of information technology has the potential to allow the IHS to do more with less at all levels of the organization. Equally significant benefits may be secured by technologic improvements in the treatment and prevention of diseases. Such improvements in consumer services have already been demonstrated through applied research in IHS and tribal clinics in collaboration with several research institutions, and the potential for even more collaboration is very real. For instance, the impact of a break-through technology in preventing or controlling diabetes could be staggering, both economically and in terms of reducing human suffering.

In the most fundamental ways, IT is transforming how we work. Front-line workers can have at their fingertips vast quantities of information that were once stored in musty archives -- and can access it instantaneously. Decision support systems can take employees through complex decision trees and logic. Customers can directly access remote information through integrated voice response systems, electronic bulletin boards, and the World Wide Web. Senior executives can communicate instantly with their entire staffs, without going through intermediate management layers. Information technology (IT) can transform how an organization achieves its mission. Moreover, it can enable radical and fundamental change in business processes. The management of data, information, knowledge, and processes has become the focus of IT.

The IHS and Tribes are moving into a new information systems environment. This is caused by: a) the tribal takeover of the program and the associated tribal option on whether or not to report the same program data into the IHS central database as IHS providers report, b) new reporting requirements being prescribed by other federal agencies, e.g., the Health Care Financing Administration, States, etc., and c) changing information technologies. IHS and the tribes plan to develop new information systems strategies and policies. Therefore, the current IHS information structure and network may change in the next five years. This will probably require adjustments to the way Government Performance and Results Act (GPRA) measures are calculated.

Information technology is both expensive and mission critical. Information technology investments, especially in this era of constrained Federal resources, must be treated as major business decisions, made by senior executives through a comprehensive and integrated capital planning and budgeting process, using sound economic analysis. Clear performance goals must be established and progress measured against them to maintain accountability and ensure that these expensive investments achieve their goals.

II. Strategic Plan

A. Strategic Planning Assumptions

These assumptions identify the anticipated conditions and circumstances under which the Plan will be accomplished, such as budget constraints, personnel ceilings, legislative or organizational directions, and the capabilities, cost, and availability of technology and tools.

- 1. Demand will increase for re-engineering and modernization of RPMS.** Improvement in the quality of medical care being provided American Indians and Alaska Natives will require an enhanced patient and resource management information system to provide timely, quality and accurate data for decision making and to improve delivery of health care services. The Department of Defense, Department of Veterans Affairs, Indian Health Service, and Louisiana State University Medical Center are forming a partnership to define the technical and functional requirements for the development of a worldwide Government Computer-based Patient Record (G-CPR). The G-CPR will revolutionize the documentation of health care provided to beneficiaries. The G-CPR provides paperless documentation of health care delivered to an individual over the course of their lifetime, regardless of where the care is provided. Coordination with national and international organizations will be required to develop standards for the G-CPR.
- 2. Complete and accurate computer-based patient information at the point of care.** Practitioners need immediate access to patients' medical records to make well informed, safe judgments and recommendations and to avoid unnecessary visits and procedures. An electronic medical record must be accessible in wards, clinics, examining rooms, nursing stations, offices, and other locations where patients are seen. Desktop and portable workstations will serve as each clinician's window into the information world, capable of accessing and synthesizing health care information from a variety of sources.
- 3. The role of the IHS national data repository, formerly the Data Center, will change.** Distributed computing and related client/server database technologies will continue to increase in popularity and require pervasive, reliable networking and capacity management. The role of the IHS national data repository as a centralized, all-encompassing resource will change, as it becomes specialized "servers" on the IHS network. The inclusion of Internet based inputs will enhance the capabilities of non-RPMS users and increase the customer support requirements of the national data repository.
- 4. Implementation of the Indian Self-Determination and Education Assistance Act will grow.** Joint efforts between tribes and the IHS to maintain and improve the information resources infrastructure will become especially important as IRM funds are transferred directly to the tribes under Title I and Title III of the Indian Self-Determination and Education Assistance Act.

- 5. The Year 2000 Problem will require a major technological and managerial effort.** Because of a design feature in many electronic systems, a large number of activities in the public and private sectors could be at risk beginning in the year 2000. Some computer systems and other electronic devices will misinterpret the year "00" as 1900, rather than 2000. Unless appropriate action is taken, this flaw, known as the "Y2K problem", can cause systems that support those functions to compute erroneously or simply not run.
- 6. Workload will grow.** Increased availability and daily use of automation will require additional training and technical support. IHS expects increases in the number of clients served by its major programs.
- 7. Budget pressures will compel efficiency.** The continuing struggle to contain the Federal budget deficit will place continuing pressure on the IHS to improve efficiency. IHS must reengineer its processes and use technology intelligently to better meet service goals and objectives, while maintaining or reducing costs. Effective information resources management will become complicated by insufficient FTEs and funding.
- 8. Demand for information will increase.** Information needs at all levels of IHS will continue to grow, requiring more frequent access to current information and increasing the requirement for integrated databases to realize productivity gains, program improvements, and improved service delivery. Clients, service providers, and IHS end users will become more sophisticated in their use of information and technology and will expect improved access to information. Exchange of electronic information between agencies and external organizations will increase. Availability of the IHS LAN and WAN technology (e.g., electronic mail, Internet access) will facilitate sharing of information and files internal and external to the IHS. Electronic information exchange with the public will increase further due to continued use of the Internet and World Wide Web (WWW or Web) resources.
- 9. Interoperability will improve considerably.** Over the next few years, implementation and universal acceptance of open systems standards will enable IHS to provide seamless connections (i.e., all users will have desktop access to every other employee and to all of the major resources of the IHS for which they are authorized). Advances in technology will facilitate improvements in the agency's information infrastructure. A mix of IRM architectures, manufacturers, and equipment will be required to support IHS' information needs.
- 10. IT infrastructure elements will require more intensive management.** In general, IT requires organizational leadership, standardization of architecture, and enterprise-wide strategic planning to promote a consistent and focused agency-wide IT resource management program. Initiatives which support these approaches will enable agency-wide IT resources to be applied in ways which promote efficient use of resources and support Information Technology Management And Reform Act (ITMRA) guidelines for IT capital investment management. The IT management process must support development of IT performance measures and evaluation criteria. These baseline measures and criteria will assist IHS to establish a "return on investment " approach to IT investments required by implementation of the ITMRA. This major challenge will affect strategic planning for application and development of IT resources and management of the in-place resources.
- 11. Information systems will focus on end users.** Reengineering will intimately involve users in system development projects, and end user tools will provide them with technological support for accessing, analyzing, and manipulating information.

- 12. Mature expert systems will become available for widespread use.** Automated systems will be used in a variety of ways to provide expert advice.
- 13. Access to training and reference information will increase and involve distant sources.** Access to information on learning opportunities, and "distance learning", will become vital to the agency's efforts to maintain the expertise levels (and accreditation) of its geographically scattered human resource base. Similarly, access to reference and consultative resources will increasingly involve distant sources.
- 14. Public access to data will increase.** Clients will have direct access to information about IHS programs and to information about their specific records/benefits by means of technology-supported vehicles, such as personal computers, touch-tone telephones, and information kiosks.
- 15. Electronic transfer of information and funds will increase.** The Health Insurance Portability and Accountability Act (HIPAA) and healthcare reform make it necessary to use electronic data interchange (EDI), electronic benefits transfer (EBT), and electronic identification for reengineering of IHS systems and services, in support of electronic exchange of financial and healthcare data including procurement, medical billing, electronic funds transfer, benefits payments, and computerized medical records. Bandwidth to support EDI/EBT will also be increasing as telemedicine and teleradiology and distance learning will become common with in this.
- 16. Demands for security of sensitive information will increase.** As the volume of information stored, accessed, and transferred electronically increases clients will demand -- and regulations will require -- effective access controls, privacy, and assured data integrity especially those associated with, or integral to the Internet. Increased emphasis on the importance of information security and compliance with Federal legislation and regulations will continue.
- 17. Legislative requirements will influence changes to IRM technological needs.** Implementation of the Government Performance and Results Act (GPRA), the Information Technology Management and Reform Act (ITMRA), and reorganization of IHS components primarily responsible for providing Information Technology (IT) to IHS users, will require changes in existing IT management processes and will improve the management of IHS' IT resources.
- 18. Standards will become increasingly important.** In an increasingly diverse computing environment, IHS will continue to develop standards that will be used as guidelines for new development. This is especially true in networking, where emerging standards for higher capacity network strategies will provide mechanisms for meeting the demands of scientific computing and new workloads brought about by increased usage of the Internet and the Web. Transferring images and other non-textual information objects will become more common and demanding.
- 19. Standards based approach leading to a more "open" systems environment.** Simplified "plug and play" interface standards between computer applications will reduce the need for custom interface programming and program maintenance each time a new application is added. It will also stimulate the broadest possible commercial and public sector participation in developing IT solutions of benefit to IHS.

B. Mission and Organization

Overview of the Indian Health Service

The Indian Health Service (IHS), as the Operating Division (OPDIV) charged with administering the principal health program for American Indians and Alaska Natives (AI/AN), provides comprehensive health services through a system of Federal Indian Health Service; tribal and urban (I/T/U) operated facilities and programs. These I/T/Us provide health services to 1.4 million AI/AN through 144 Service Units composed of more than 500 direct health care delivery facilities, including 49 hospitals, 190 health centers, 7 school health centers, and 287 health stations, satellite clinics, and Alaska village clinics. Within this system, Indian tribes deliver IHS funded services to their own communities with over 30 percent of the IHS budget in 11 hospitals, 129 health centers, 3 school health centers, and 240 health stations. Tribes who have elected to retain the federal administration of their health services, or to defer tribal assumption of the IHS program until a later time receive services with about 65 percent of the IHS budget in 38 hospitals, 61 health centers, 4 school health centers, and 47 health stations. The range of services includes traditional inpatient and ambulatory care, and extensive preventive care, including focused efforts toward health promotion and disease prevention activities.

In addition, various health care and referral services are provided to Indian people in off-reservation settings through 34 urban programs. Another integral part of the program is the purchase of services from non-IHS providers to support, or in some cases in lieu of, direct care facilities. This Contract Health Services program represents about 20 percent of the IHS Budget. The IHS Fiscal Intermediary in FY 1996 processed approximately 407,000 payment claims from non-IHS providers.

Redesign of the IHS

The Indian Health Service (IHS) approaches the next millennium in the midst of the most profound changes in its history. It is simultaneously faced with the challenges of downsizing and restructuring our administrative infrastructure, providing for local control of resources to tribes wishing to exercise their options of self-determination, reinventing ourselves through the directives of the Reinventing Government/National Performance Review process, and demonstrating results consistent with the Government Performance and Results Act (GPRA).

With participation from the Indian people, the IHS is exploring ways to improve essential health programs and administrative support to Indian communities. The Director convened 29 representatives of the primary stakeholders in Indian health care in January 1995 as the Indian Health Design Team (IHDT). The IHDT, which includes 22 representatives of Indian tribes and communities, submitted a report making 50 recommendations for designing a new IHS. Under their guidance, the implementation of the recommendations will be accomplished in two phases. The Indian Health Service system is being redesigned to address an era of rising health care costs, a growing population, and a changing health care industry. The redesign efforts emphasize patient care; strengthening government to government relations; streamlining administration and management; quality support services to field based health care activities; diversification of operations; facilities staffing expansion; and fair treatment of employees.

IHS Mission

The mission of the Indian Health Service, in partnership with American Indian and Alaska Native people, is to raise their physical, mental, social, and spiritual health to the highest level.

IHS Goal

To assure that comprehensive, culturally acceptable personal and public health services are available and accessible to American Indian and Alaska Native people.

IHS Foundation

To uphold the Federal Government's obligation to promote healthy American Indian and Alaska Native people, communities, and cultures and to honor and protect the inherent sovereign rights of Tribes.

These three fundamental charges to the IHS were then integrated into the evolving IHS Strategic Plan for the Government Performance and Results Act (GPRA) to yield the following four broad IHS Strategic Objectives to guide the Agency into the next millennium:

Strategic Objective 1: Improve Health Status

To reduce mortality and morbidity rates and enhance the quality of life for the eligible American Indian and Alaska Native population.

Strategic Objective 2: Provide Health Services

To assure access to high quality comprehensive public health services (i.e., clinical, preventive, community-based, educational, etc.) provided by qualified culturally sensitive health professionals with adequate support infrastructure (i.e., facilities, support staff, equipment, supplies, training, etc.)

Strategic Objective 3: Assure Partnerships and Consultation with I/T/Us

To assure that I/T/Us, and IHS Area and Headquarters achieve a mutually acceptable partnership in addressing health problems:

- providing adequate opportunities for I/T/Us and American Indian and Alaska Native organizations to participate in critical functions such as policy development and budget formulation
- assuring that I/T/Us have adequate information to make informed decisions regarding options for receiving health services

Strategic Objective 4: Perform Core Functions and Advocacy

Consistent with the IHS Mission, Goal and Foundation, to effectively and efficiently:

- advocate for the health care needs of the American Indian and Alaska Native people, and
- execute the core public health and inherent federal functions

C. Data Collection, Validation, and Information Needs

The IHS utilizes outside (non-IHS) and IHS data sources to manage its diverse programs and to assess Indian health status. The two principal outside data sources are the Bureau of the Census and the Centers for Disease Control and Prevention, especially, the National Center for Health Statistics (NCHS). The Census Bureau is the source of Indian population counts and social and economic data. However, reliable Indian census data at the county level are only available from the decennial census, every 10 years.

The NCHS provides IHS with natality and mortality files that contain all births and deaths for United States residents, including those identified as American Indian or Alaska Native. The NCHS obtains birth and death records from the State departments of health, based on information reported on official State birth and death certificates. The IHS receives these records with essentially the same basic demographic information as the records maintained by NCHS, but with names, addresses, and record identification numbers deleted as required by the Privacy Act. It should also be noted that tribal identity is not recorded in these records by the states except for New Mexico. The data are subject to the degree of accuracy of reporting by the States to NCHS. The NCHS does perform numerous edit checks and imputes values for non-responses. The IHS assigns IHS organizational (Area and service unit) identifiers to the birth and death records in setting up its Indian database. The IHS computer routines for accomplishing this has been thoroughly checked out, and the results are continuously monitored.

Several studies have shown that there is considerable miscoding of Indian race on death certificates that understates Indian mortality especially in areas not associated with Indian reservations. While the IHS has developed some techniques for adjusting for miscoding the chief limitations of mortality data are associated with time lags, i.e., the data are not typically available from NCHS until three years after the events occur and mortality data are slow in showing the impact of health interventions. Due to these constraints, IHS has chosen not to use mortality data for annual performance plan indicators except in special circumstances. The IHS will continue to use mortality data for tracking long-term trends in Indian health status and to make comparisons with other population groups. However, having to wait three years to link activities in an annual performance plan with mortality findings is of limited value in the ongoing implementation and evaluation process.

The IHS has its own program information systems to collect data on the services provided by IHS and tribal direct and contract programs. The software used by IHS facilities and most tribal facilities is the Resource and Patient Management System (RPMS). (*See Appendix B & E for more detailed descriptions of RPMS.*) Data are collected for each inpatient discharge, ambulatory medical visit, and dental visit (all patient specific) and for community health service programs including health education, community health representatives, environmental health, nutrition, public health nursing, mental health and social services, and substance abuse (all activities reporting systems). The patient-specific data are collected through the Patient Care Component

(PCC) of the RPMS. These data are subject to recording, inputting, and transmitting errors. However, IHS software systems have extensive edits built in at the facility and central database levels to detect and correct a large part of the errors. Others that cannot be detected by computer are often discovered through the monitoring for reasonableness that is performed in the field and IHS headquarters

Each facility that utilizes PCC has a facility-level database that contains the detailed PCC data collected at that site. A subset of the detailed PCC data (to meet the routine information needs of IHS Headquarters) is transmitted to the IHS central database. The PCC data are the source of most of IHS' GPRA measures since they reflect prevention activities and morbidity and do not have the time lags described previously for mortality data. However, many of IHS' proposed measures rely on detailed PCC data not currently transmitted to the IHS central database. The IHS is developing software to transmit some of these needed data items to the central database. In the meantime, IHS will need to use sampling routines to collect the required data from the individual facility-level databases. In some cases, the required data for a measure may not be part of PCC or, if it is, may not be coded at some facilities. Local surveys may need to be utilized in these areas to capture the required data. The degree to which these activities will be achieved is linked to available infrastructure to address these demands, which in turn is determined by budgets and the many competing priorities.

D. IRM Vision, Goals, and Strategies

IRM Vision

The IHS' IRM vision is one of an integrated Information Technology (IT) environment in which information is readily disseminated, shared, and exchanged by the Agency's and Tribal administrative, management, clinical, community health and statistical community. The major benefit of IT integration is to provide universally accessible decision support information which positively impacts the management and delivery of health care. All media formats - voice, video, image, text, and data - are supported in this vision. The use of commercial products and the Internet/WWW resources - internally and externally - for information sharing and exchange are an important part of this vision.

IRM Mission and Program Obligations

Public Law 100-713, Indian Health Care Amendments of 1988, Title VI, Section 602 titled *Automated Management Information System* mandates that the Indian Health Service establish an automated management information system that shall include:

- Financial Management System (FMS)
- Patient care information system for each Area served by the IHS
- Privacy component that protects the privacy of patient information held by, or on behalf of, the IHS
- Services-based cost accounting component that provides estimates of the costs associated with the provision of specific medical treatments or services in each IHS Area Office.

In addition, *P.L. 100-713* mandates that the Secretary provide automated management information systems to each Indian tribe and tribal organization that provides health services under a contract entered into with the IHS under the Indian Self-Determination Act. These systems must meet the management information needs of these Indian tribes or tribal organizations with respect to the treatment of IHS patients as well as meet the information needs of the IHS agency.

Cross-Cutting IRM Strategies

In addressing the IHS IRM goals, the following common strategies have been identified:

1. Continuously conduct IT research and evaluation to identify advantageous technologies;
2. Employ standards-based approaches to maximize interoperability, e.g., open systems, client-server, Internet, electronic data interchange (EDI);
3. Reduce integration complexity through an enterprise information technology architecture;
4. Develop a human resources model based on the agency information technology architecture and continuously train and retool the workforce to leverage IT;
5. Leverage the changing business and technology environments and involve customers and stakeholders in initiatives;
6. Demonstrate and quantify the value of IRM to top leadership and management;
7. Improve IRM decision-making process based on more quantitative analyses;
8. Assure commitment to continuous technology and security training of all staff;
9. Continue development of IHS information technology, systems, and data management standards and guidelines; and
10. Develop and continuously analyze the IHS inventory of information technology, system, and data assets to identify areas for improved management, addressing existing gaps, reducing total cost of ownership, etc.

Goals and Strategies

The IHS goals and strategies that support this vision are presented in the matrix below:

GOALS		STRATEGIES	
G1	Promote ongoing monitoring and implementation of new technologies to enhance the current technology base for delivering and sharing of information.	S1a	Expand wide area network (WAN) and local area networks (LANs) to provide continuously available high-speed network services to all IHS and tribally operated facilities
		S1b	Expand communications of clinical and administrative data between facilities
		S1c	Provide access to external sources of medical and other knowledge bases for use within IHS using the Internet and the IHS wide area network
		S1d	Establish an open computing framework for information systems which defines the overall IHS architecture
		S1e	Utilize recognized and emerging standards for electronic data interchange (EDI) for compliance with the HIPPA and Federal Acquisition Act and data exchange with Tribal, State and Federal Entities
		S1f	Ensure effective access controls, privacy, encryption, and data integrity for all systems storing sensitive information
		S1g	Participate in national IRM initiatives such as High-Performance Computing and Communications (HPCC)
		S1h	Participate and provide leadership in the development of nationwide medical records automation activities such as the Computer-Based Patient Record
G2	Provide information systems to meet Tribal information needs	S2a	Develop applications to meet Tribal systems requirements
		S2b	Develop standard utilities to transfer IHS data to Tribal information systems

GOALS		STRATEGIES	
G3	Foster an organizational management-planning environment that capitalizes on feedback from customers, systems data, and IRM trends.	S3a	Ensure information systems respond to users needs and mission priorities
G4	Provide timely, accurate, and secure integrated information in support of high quality patient care (excellence in clinical decision making) and management decision support.	S4a	Increase interoperability between internal and external applications using HL7 and ANSI X12 standards to exchange clinical, administrative and financial data
		S4b	Integrate IRM systems into the work environment that appear seamless to the user
		S4c	Implement Total Quality Management (TQM) programs to improve service delivery
		S4d	Make agency-level commitment to provide staff with IRM training and support
		S4e	Increase "business process" orientation, including improved cost accounting and recovery, enhanced decision support capabilities, and an evolution toward managed care

E. Major Strategic Issues

The following strategic issues have been identified as having impact on the achievement of established IRM goals:

- **Technical Support** - The need for technical support is critical to maintaining the hardware, telecommunications, and software required for information systems throughout the IHS.
- **Tribal Data Management and Connectivity** - There is an increasing number of Tribes who manage their own health delivery systems which directly impacts the need for adequate data management capability and IHS database integration.
- **Indian Self-Determination** - As federal functions are transferred to tribes under compacting and contracting, it will become especially important that IHS and tribal governments work together to maintain and enhance the capabilities of the IRM infrastructure.
- **The Year 2000.** IHS information systems (like private sector systems) do not store dates in a four-digit format and will produce erroneous results at the turn of the century. Failure to identify and solve Year 2000 problems in IHS systems could negatively impact health care and services. Currently, work is underway throughout IHS to review systems for Year 2000

readiness and replace or modify systems as necessary. Appendix D of this document is the IHS Year 2000 Plan.

F. Automated Information Systems (AIS) Security

The 1996 revised OMB Circular A-130; Appendix III (AAIS Security) requires security controls in all general support systems under the presumption that *all* contain some sensitive information. This revised A-130 focuses extra security controls on particularly high risk or major applications and requires agencies to follow thirteen security program initiatives and activities, one of which is to include the security plan as part of the Agency's IRM plan. The past, present and future activities in the IHS AIS Security Program are described in Appendix B - Automated Information Systems (AIS) Security of this document.

III. Capital Planning and Investment

A. Strategic IT Planning

The Information Technology Management and Reform Act (ITMRA) establishes new requirements for the IT planning process that emphasizes the management of IT resources as a "capital investment" and links these IT planning activities to budget and performance measures. The Act reflects the growing importance that the management of IT resources plays in contributing to efficient government operations.

IHS will issue policy that provides an overall framework for the planning, budgeting, acquisition, development, deployment, and evaluation of information systems. The policy will provide a unified approach throughout IHS. It will provide the basis for executive level review of IT plans and implementations and for increasing the Agency's delegated procurement authority. This will fulfill our intention of putting IT decisions in the hands of officials in the agency's primary business lines, while preserving accountability.

The budget process is the mechanism through which the portfolio of IT investments is selected and funded. Increased attention needs to be given to the economic and business justification of major investments. One of the key considerations during the budget formulation phase must be whether the function should continue to be performed by the Federal government, or whether it should be privatized. If it is determined to be a Federal function, it may be re-engineered. During the budget execution phase, an intensified management control process will be established to ensure performance goals are achieved, and that IT projects are delivered on time, within budget, and perform as intended.

B. IT Investment Review Process

The establishment of an IT investment review process as required by ITMRA represents a major paradigm shift in IT planning, acquisition and management. Because of this, IHS efforts have focused on educating the key people involved in the new IT management process and providing technical guidance in the development of IT management processes consistent with their operational and management environments. IHS' approach to ITMRA implementation will

follow the example of the Department in delegating responsibility and authority to the Area Directors. IHS will issue an Interim ITMRA Implementation Process and IHS IT Management Guide for use by Area office staff.

C. IT Performance Measurement Program

As part of the requirements of GPRA and the ITMRA, performance measurement is an essential part of effective management. ITMRA requires IHS to measure the contribution of IT investments to mission results. To effectively link strategic and IT capital planning along with the budget process, IT performance measurement efforts must monitor the performance of IT investments/projects to address whether they are effectively supporting the mission and programs of IHS.

Since performance measurement is an evolving, iterative challenge, IHS is currently looking for effective mechanisms to: measure performance and effectiveness of IT within IHS; make meaningful conclusions from the results; and continue to manage and reevaluate IT investments in light of changing priorities in mission and budgets. IHS will use the performance metrics process as a "team effort " to measure its progress toward achieving mission objectives. Senior managers, IT managers, program personnel, and customers will work together to establish performance measures on program objectives to gauge how well their IT supports their program efforts.

D. Information Technology Architecture (ITA)

The ITA needs to be adaptive to mission and technology changes and will evolve over time. A detailed description of IHS' current ITA is listed in Appendices B & C of this document. The ITA describes the relationships among the work the agency does, the information the agency uses, and the information technology that the agency needs. It includes standards that guide the design of new systems and ensures:

- alignment of the requirements for agency-sponsored information systems with the processes that support the agency's missions and goals;
- adequate interoperability, redundancy, and security of information systems; and,
- the application and maintenance of a collection of standards by which the agency evaluates and acquires new systems.

Following the completion of the IT Strategic Plan in FY 1998, a reference architecture will be developed; the gap between the current and target environments established; and a plan formulated for moving to the target environment. Key principles that will be reflected in IHS's target architecture include portability, scalability, consistent user interfaces, improved security, an open systems environment, and use of standards.

IV. Projects

A. Government - Computer Patient Record (G-CPR)

The CPR will contain an individual's health-related information, including health service encounter, health status and clinical problems, thereby forming the information foundation for supporting the entire life cycle of the patient. It provides a means to access and update patient information at any point in the organizational continuum and will document the medical status of an individual, facilitate health surveillance, and create a basis for analysis of health-related threats and illnesses. The CPR will follow technologically appropriate standards and guidelines. It will comply with privacy, data, and messaging requirements for communications between military and key civilian health care elements. The system modular design will facilitate integration of new functionality and enhancements of existing capabilities and will allow exchange of data between Federal, State and private sector technical environments. See Appendix F - Government - Computer Patient Record (G-CPR) for the detailed description of this project.

B. The Year 2000 Problem

IHS information systems (like private sector systems) do not store dates in a four-digit format and will produce erroneous results at the turn of the century. Failure to identify and solve Year 2000 problems in IHS systems could negatively impact health care and services. Currently, work is underway throughout IHS to review systems for Year 2000 readiness and replace or modify systems as necessary. Appendix D of this document is the IHS Year 2000 Plan.

- V. Appendix A - Automated Information Systems (AIS) Security**
- VI. Appendix B - Current Information Technology Architecture**
- VII. Appendix C - IHS RPMS Software Applications**
- VIII. Appendix D - IHS Year 2000 Plan**
- IX. Appendix E - List of RPMS Software Applications**
- X. Appendix F - Government - Computer Patient Record (G-CPR)**